DT80 Series 2

Data Logger

dataTaker®

Intelligent Data Logging Products

- USB memory for easy data & program transfer
- Dual Channel Isolation Technology
- 2 Serial 'Smart Sensor' ports
- User Definable allocation of memory size & mode
- Web Interface
- FTP for automatic data transfer
- Modbus for SCADA connection
- SDI-12 (multiple networks)
- Up to 15 Analog (± 30V) sensor inputs
- Expandable to 300 analog inputs
- 12 Flexible Digital channels

Specifications

The Smarter Solution

The *dataTaker DT80* is a smart data logger that provides an extensive array of features that allow it to be used across a wide variety of applications. The *DT80* is a robust, stand alone, low power data logger featuring USB memory stick support, 18 bit resolution, extensive communications capabilities and built-in display. The *dataTaker DT80*'s Dual Channel concept allows up to 10 isolated or 15 common referenced analog inputs to be used in many combinations.

With support for multiple SDI-12 sensor networks, Modbus for SCADA systems, FTP and Web interface, 12V regulated output to power sensors, the *DT80* is ready to be rolled out into environmental, industrial and many other types of monitoring projects.

Versatile Measurement

Analog and digital channels, high-speed counter inputs, phase encoder inputs and programmable serial sensor channels allow the *DT80* to easily connect to most sensors and data measurement sources. Temperature, voltage, current, 4-20mA loops, resistance, bridges, strain gauges, frequency, digital, serial and calculated measurements can all be scaled, logged and returned in engineering units or within statistical reporting. Group sampling, logging, alarm and control tasks within schedules to suit your requirements. Smart sensors, GPS, PLCs and other intelligent devices are supported via 2 serial sensor ports (RS232 or RS422/485), with our optional *CANgate* interface available for CAN bus applications.

Manage a variety of sensors or devices using the Sensor Power options via dedicated power output, digital outputs or the latching relay configurations.

Superior Data Storage and Communications

Store up to 5 million data points in user defined memory, log as much or as little as you need with independent control of schedule size and mode. Overwrite or stop logging once allocated memory is full. Archive data on alarm event, copy to USB memory or transfer via FTP, the choice is yours.

Communications features include RS232 with modem support, USB, Ethernet and USB memory stick ports. Connect to the *DT80* locally, remotely or over the Internet. The web interface allows users to configure the *DT80*, access logged data and see current measurements as mimics or in a list using a web browser. FTP provides data to your office over the internet or mobile phone network, without the need for polling or specific host software.

Take the next step and experience the *DT80* by contacting your local distributor or *dataTaker* office.

Applications include:

- Research & Development
- Agricultural Research
- Weather Stations
- Total Energy Monitoring
- Environmental Monitoring
- Temperature Profiling
- Thermistor Arrays
- Aquaculture
- Structural Monitoring
- Strain Gauges
- Process Monitoring
- Fault Identification
- Machine Down Time
- Pressure
- Load Cells
- Flow
- Vehicle Testing
- GPS
- *CANgate* (optional)
  - CAN bus
  - J1939
  - OBDII

FREE Software & Technical Support

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Analog Channels

5 analog input channels (expandable to 100*)

Each channel is independent and supports: one isolated 3-wire or 4-wire input, or two isolated 2-wire inputs, or three common referenced 2-wire inputs.

The following maximums apply.

Two wire with common reference terminal: 15 (expandable to 300*)

Two wire isolated: 10 (expandable to 200*)

Three and four wire isolated: 5 (expandable to 100*)

*Expansion requires optional *CEM20*

Fundamental Input Ranges

The fundamental inputs that the *DT80* can measure are voltage, current, resistance and frequency. All other measurements are derived from these.

Full Scale	Resolution	Full Scale	Resolution
±30 mVdc	0.25 µV	100 Ω	1.5 mΩ
±300 mVdc	2.5 µV	1000 Ω	15 mΩ
±3 Vdc	25 µV	10,000 Ω	150.00 mΩ
±30 Vdc	250 µV	100 Hz	0.0002 %
±0.3 mA	2.5 nA	10 kHz	0.0002 %
±3 mA	25 nA		
±30 mA	250 nA		

Auto-ranging is supported over 3 ranges.

Accuracy

Measurement at ...	5°C to 40°C	– 45°C to 70°C
DC Voltage	0.1%	0.35%
DC Current	0.15%	0.45%
DC Resistance	0.1%	0.35%
Frequency	0.1%	0.25%

Accuracy table above is % of reading ±0.01% of full scale.

Sampling

Integrates over 50/60Hz line period for accuracy and noise rejection

Maximum sample speed: 25Hz

Effective resolution: 18 bits

Linearity: 0.01%

Common mode rejection: >90dB

Line series mode rejection: >35dB

Inputs

Inter-Channel Isolation: 100V (relay switching)

Analog Section Isolation: 100V (opto-isolated)

Input impedance: 100KΩ, >100MΩ

Common mode range: ±3.5V or ±35V on 30V range

Sensor Excitation (Supply)

Analog channels: selectable 250µA or 2.5mA precision current source, 4.5V voltage source, or switched external supply.

General Purpose: Switchable 12V regulated supply for powering sensors & accessories. (max 150mA)

Analog Sensors

Supports a wide range of sensors including, but not limited to, those listed below. A wide range of sensor scaling and linearising facilities including polynomials, expressions and functions.

Thermocouples

Types: B, C, D, E, G, J, K, N, R, S, T

Calibration standard: ITS-90

RTDs

Materials supported: Pt, Ni, Cu

Resistance range: 10Ω to 10KΩ

Thermistors

Types: YSI 400xx Series, other types*

Resistance range: <10kΩ**

* Other thermistor types are supported by thermistor scaling and calculated channels.

**Resistance range can be increased with the use of a parallel resistor.

Monolithic Temperature Sensors

Types supported: LM34 - 60, AD590, 592, TMPxx LM135, 235, 335

Strain Gauge and Bridge Sensors

Configurations: ¼, ½ & full bridge

Excitation: voltage or current

4-20mA Current Loop

Internal 100R shunt or external shunt resistor

Digital Channels

Digital Input/Outputs

8 bi-directional channels

Input Type: 8 logic level (max 20/30V)

Output Type: 4 with open drain FET (max: 30V, 100mA), 4 with logic output.

Relay Output

1 latching relay, contacts (max: 30Vdc, 1A)

Counter Channels

Low Speed Counters

8 counters shared with digital inputs.

Low speed counters do not function in sleep mode.

Size: 32 bit

Max Count rate: 10 Hz

Dedicated Counter Inputs

4 high speed or 2 phase encoder (quadrature) inputs

Size: 32 bit

Max Count rate: 10 kHz

Input type: 2 logic level inputs (max ±30V), 2 sensitive inputs (10mV) for magnetic pick-ups (max ±10V)

Serial Channels

SDI-12

4 SDI-12 inputs, shared with digital channels. Each input can support multiple SDI-12 sensors.

Generic Serial Sensor

Flexible options to allow data to be logged from a wide range of smart sensors and data streams.

Available ports: Serial Sensor Port (RS232, RS422, RS485) or Host RS232 Port*

Baud rate: 300 to 115200

*If used as a Serial Sensor channel then the Host Port is not available for other communications.

Calculated Channels

Combine values from analog, digital and serial sensors using expressions involving variables and functions.

Functions: An extensive range of Arithmetic, Trigonometric, Relational, Logical and Statistical functions are available.

Alarms

Condition: high, low, within range and outside range

Delay: optional time period for alarm response

Actions: set digital outputs, transmit message, execute any *dataTaker* command.

Scheduling of Data Acquisition

Number of schedules: 11

Schedule rates: 10ms to days

Data Storage

Internal Store

Capacity: 64MB = approx 5,000,000 data points

Removable USB store device (optional accessory)

Types: compatible with USB 1.1 or USB 2.0 drives, e.g. Flash drive.

Capacity: approx. 90,000 data points per megabyte.

Communication Interfaces

Ethernet Port

Interface: 10BaseT (10Mbps)

Protocol: TCP/IP

USB Port

Interface: USB 1.1 (virtual COM port)

Protocol: ASCII command

Host RS232 Port

Speed: 300 to 115200 baud (57,600 default)

Flow Control: Hardware (RTS/CTS), Software (XON/XOFF), None

Handshake lines: DCD, DSR, DTR, RTS, CTS

Modem support: auto-answer and dial out

Protocols: ASCII Command, TCP/IP (PPP), Modbus, Serial Sensor

Serial Sensor Port

Interface: RS232, RS422m RS485

Speed: 300 to 57,600 baud

Flow Control: Hardware (RTS/CTS), Software (XON/XOFF), None

Protocols: Modbus, Serial Sensor

Network (TCP/IP) Services

Uses Ethernet and/or Host RS232 (PPP) ports

Command Interface

Access the ASCII command interface of the *DT80* via TCP/IP

Web Server

Access current data and status from any web browser. Custom pages can be defined. Download data in CSV format. Command interface window. Define mimic displays.

Modbus Server (slave)

Access current data and status from any Modbus client (e.g. SCADA system)

FTP Server

Access logged data from any FTP client or web browser

FTP Client

Automatically upload logged data direct to an FTP server

System

Display and Keypad

Type: LCD, 2 line by 16 characters, backlight.

Display Functions: channel data, alarms, system status.

Keypad: 6 keys for scrolling and function execution.

Status LEDs: 4 for sample, disk, attention and power.

Firmware Upgrade

Via: RS232, Ethernet, USB or USB disk.

Real Time Clock

Normal resolution: 200µs

Accuracy: ±1 min/year (0°C to 40°C), ±4 min/year (-40°C to 70°C)

Power Supply

External voltage range: 10 to 30Vdc

Internal battery: 6Vdc 1.2Ahr lead acid

Peak Power: 12W (12Vdc 1A)

Average power Consumption

Using 12Vdc external power source

Sampling Speed	Average Power
1 second	1350 mW
5 second	500 mW
30 second	135 mW
5 minutes	70 mW
1 hour	60 mW

Typical Operating Time

from internal 6Vdc, 1.2Ahr battery

Sampling Speed	Operating Time
1 second	6.5 hours
5 second	1 day
1 minute	10 days
1 hour	3.5 months

Physical and Environment

Construction: Powder coated zinc and anodized aluminum.

Dimensions: 180 x 137 x 65mm

Weight: 1.5kg (4kg shipping)

Temperature range: –45°C to 70°C *

Humidity: 85% RH, non-condensing

*reduced battery life and LCD operation outside range –15°C to 50°C

Accessories Included

Resource CD: includes software, video training and user manual.

Comms cable: USB cable

Line adaptor: 110/240Vac to 15Vdc, 800mA

Optional Accessories

A range of accessories are available. Contact your local distributor or visit www.datataker.com

dataTaker®

For full technical specifications download the user's manual from our website.

www.datataker.com

Warranty: The *dataTaker DT80* is covered by a 3 year warranty on workmanship and parts. For further information on the *dataTaker* range, or for useful downloads, visit the Datataker web site at www.datataker.com or contact your nearest Datataker office or distributor.

Quality Statement: Datataker operates a Quality Management System complying with IS09001:2000. It is Datataker's policy to supply customers with products which are fit for their intended purpose, safe in use, perform reliably to published specification and are backed by a fast and efficient customer support service.

Trademarks: *dataTaker* is a registered trademark of Datataker Pty Ltd.

Specifications: Datataker Pty Ltd reserves the right to change product specifications at any time without notice.

Designed and Manufactured in Australia.

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